

In the Claims

- 1 1. (currently amended) A method for locating a mobile node in a partially
2 synchronized wireless network, comprising:
 - 3 measuring a first time interval to transmit a first message from a first
4 stationary node at a first known location to a mobile node at an unknown
5 location;
 - 6 measuring a second time interval to transmit a second message from a
7 second stationary node at a second known location to the mobile node, in
8 which the first stationary node is time synchronized with the second
9 stationary node;
 - 10 broadcasting, from the mobile node, a third message to a third
11 stationary node at third known location and a fourth stationary node at fourth
12 known location;
 - 13 measuring a first received signal strength of a the third message
14 ~~transmitted by the mobile node to a~~ at the third stationary node ~~at third~~
15 ~~known location;~~
 - 16 measuring a second received signal strength of the third message
17 ~~transmitted by the mobile node to a~~ at the fourth stationary node ~~at fourth~~
18 ~~known location;~~
 - 19 determining a first set of possible coordinates of the mobile node from
20 the first time interval and the second time interval;
 - 21 determining a second set of possible coordinates of the mobile node
22 from the first received signal strength;
 - 23 determining a third set of possible coordinates of the mobile node
24 from the second received signal strength; and

25 intersecting the first, second and third sets of possible coordinates of the
26 mobile node to estimate a location of the mobile node.

1 2. (original) The method of claim 1, in which each node includes a unique
2 identification, and each message includes a unique serial number.

1 3. (original) The method of claim 1, in which the mobile nodes are sensor
2 nodes in an ad hoc wireless network.

1 4. (original) The method of claim 1, in which the messages are transmitted in
2 response to a locate request message identifying the mobile node.

1 5. (original) The method of claim 1, in which the first set of possible
2 coordinates is a solution set of a hyperbolic function.

1 6. (original) The method of claim 1, in which the first and second set of
2 possible coordinates are solution sets of circular functions.

1 7. (original) The method of claim 1, in which a communication range of the
2 mobile node is substantially less than a transmit communication range of the
3 stationary nodes.

1 8. (currently amended) A system for locating a mobile node in a partially
2 synchronized wireless network, comprising:

3 a mobile node at an unknown location configured to obtain a first time
4 interval to transmit a first message from a first stationary node at a first
5 known location to the mobile node and a second time interval to transmit a

6 second message from a second stationary node at a second known location
7 to the mobile node, in which the first stationary node is time synchronized
8 with the second stationary node, and further configured to broadcast a third
9 message to a third stationary node at a third location and a fourth stationary
10 node at a fourth known location;

11 a third stationary node at a third known location configured to
12 measure a first received signal strength of a third message ~~transmitted~~
13 broadcast by the mobile node;

14 a fourth stationary node at a fourth known location configured to
15 measure a second received signal strength of the third message ~~transmitted~~
16 broadcast by the mobile node;

17 means for determining a first set of possible coordinates of the mobile
18 node from the first time interval and the second time interval, a second set of
19 possible coordinates of the mobile node from the first received signal
20 strength, and a third set of possible coordinates of the mobile node from the
21 second received signal strength; and

22 means for intersecting the first, second and third sets of possible
23 coordinates of the mobile node to estimate a location of the mobile node.